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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,042	01/09/2004	Mou-Shiung Lin	JCLA8533-D2	8665
23900	7590	10/06/2005	EXAMINER FENTY, JESSE A	
J C PATENTS, INC. 4 VENTURE, SUITE 250 IRVINE, CA 92618			ART UNIT 2815	PAPER NUMBER

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/755,042

Applicant(s)

LIN ET AL.

Examiner

Jesse A. Fenty

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 163-208 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 163-208 is/are rejected.
- 7) ☒ Claim(s) 177 and 178 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/22/05 has been entered.

Claim Objections

2. Claims 177 and 178 are objected to because of the following informalities: Claim 177 cannot depend from claim 177. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 166 and 204 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

a. In re claims 166 and 204, as written, neither the disclosure nor the drawings support an embodiment in which the substrate has a bottom surface that is coplanar with the bottom surface of a die. Rather, the bottom surface of the die is coplanar with the bottom surface of the trench in which the die sits.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 205 and 206 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 205 recites the limitation "said film layer" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

b. In re claim 206, the term "bus shape" is vague and indefinite without specifically describing the shape of the bus.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 163-173, 176-192 and 195-208 are rejected under 35 U.S.C. 102(b) as being anticipated by Cole, Jr. et al. (U.S. Patent No. 5,434,751).

In re claims 163, 179 and 197-199, Cole discloses an electronic package, comprising:

a substrate (11) comprising silicon;

a die (12) joined with the substrate; and

an upper metallization structure over said die and extending to a place not over said die.

The limitation, "wherein ... electroplated metal" refers to the process for making this product. a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. By claiming "electroplated metal" without naming the material used for the metal does not further limit the claimed structure from the prior art. "Electroplated metal" simply refers to how the metal lines were made, not the actual material used in those

metal lines. Therefore, as written, the claim in broad in that the metal layers used by Cole anticipate the metal lines of the claim, even if not made by "electroplating."

In re claims 164, 180 and 200, Cole discloses the devices of claims 163, 179 and 198, wherein a cavity is in said substrate and accommodates said die, said die having a bottom surface joined with the bottom of said cavity.

In re claims 165, 181 and 201, Cole discloses the devices of claims 163, 179 and 198, wherein said substrate has a top surface comprising a first region and a second region, said die joined with said first region, said second region not covered by said die, said first region being coplanar with said second region.

In re claims 166, 182 and 204, as best understood, Cole discloses the devices of claims 163, 179 and 197, wherein an opening is in said substrate and accommodates said die, said substrate having a top surface coplanar with a top surface of said die, and a bottom surface coplanar with a bottom surface of said die.

In re claims 167, 183 and 202, Cole discloses the devices of claims 163, 179 and 197, further comprising a polymer layer (24) under a metal layer of said upper metallization structure.

In re claims 168, 184 and 203, Cole discloses the devices of claims 163, 179 and 197, further comprising a polymer layer (38) over a metal layer of said upper metallization structure.

In re claims 169 and 188, Cole discloses the devices of claims 163 and 179, wherein said die has a top surface at a horizontal level, (a portion of) said substrate

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being under said horizontal level, said upper metallization structure being over said horizontal level.

In re claims 170, 189 and 207, Cole discloses the device of claims 169, 188 and 197, wherein said top surface comprises multiple pads (12a).

In re claims 171, 190 and 208, Cole discloses the devices of claims 169, 188 and 197, further comprising a passive device¹ over said horizontal level.

In re claims 172, 173, 191 and 192, Cole discloses the device of claims 163 and 179, further comprising a conductive adhesive tape (14) joining said die and said substrate.

In re claims 176 and 195, Cole discloses the devices of claims 163 and 179, further comprising a filling layer (24) over said substrate and surrounding said die.

In re claim 177, 178, 196 and 205, as best understood, Cole discloses the devices of claims 176, 179 and 197, wherein said filling layer comprises polymer (co-polymer 24, which is also a thermoplastic adhesive (epoxy)).

In re claims 185-187, Cole discloses the device of claim 179. The limitations, "used to transmit" and "used to provide", are recitations of the intended use of the claimed device. Terms that simply set forth the intended use, a property inherent in or a function, do not differentiate the claimed composition of these elements from those known to prior art.

¹ Inherency dictates that the multiple metal lines separated by insulating layers will form natural capacitors in the upper layers of the package.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 174, 175, 193 and 194 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole as applied to claims 163 and 179 above, and further in view of Goetz et al. (U.S. Patent No. 6,175,161 B1).

In re claims 174, 175, 193 and 194, Cole discloses the devices of claims 163 and 179, but does not expressly disclose a gold bump overlying the multiple metal layers. Goetz discloses solder and gold bumps (19, 21) overlying multiple metal layers atop a substrate. It would have been obvious for one skilled in the art at the time of the invention to use the gold bumps of Goetz for the device of Cole for the purpose, for example, of better connecting the metallization layers to external circuits.

Response to Arguments

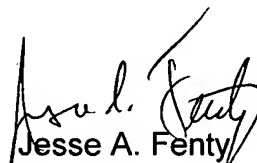
11. Applicant's arguments with respect to claims 30-40, 43-48, 52, 54-60 and 141-162 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on 5/4-9 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jesse A. Fenty
Examiner
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